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Spring blossoms? The photo on this month's cover may be a bit premature. But, considering that we're had one of the snowiest and coldest winters for quite some time, we thought that some early sign of spring might be appreciated—even though only in a picture.

in this issue

April Iowa Farm Science Reprints
(available about mid-month)

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chat with the editors

WHAT WOULD HAVE HAPPENED IF . . . ?

What would have happened if we hadn't "discovered" electricity? It's hard to say off the cuff. Electricity was discovered. But, if it hadn't been, what would have happened instead? What of yesterday, today, tomorrow?

To find out, we'd have to assume that electricity wasn't discovered--that Ben Franklin didn't experiment with lightning and that Marconi, Edison, Bell and others didn't experiment further with what hadn't been discovered. We'd have to assume away a lot of things and then decide whether or not to assume that a substitute for electricity had or hadn't been discovered. We'd have to decide on what we believed to be the most realistic assumptions (and we might have some arguments about them). We might never come up with precisely what would have happened, and we could hardly check it against a reality in which we do have electricity. But we'd have a better idea of the kinds of possibilities than if we hadn't looked at all.

The article on page 16 deals with a currently controversial subject--the possibility of a free market for agriculture. Summarized are the results of several studies looking into the possible kinds of effects. The precise effects are difficult to know unless and until they happen.

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Here's one way to...

Overcome the Surplus Problem

A land retirement program offers one positive way of handling the surplus problem. And agricultural economists at Iowa State have come up with some estimates of the costs and effectiveness of one such program.

by Walter Butcher and Earl O. Heady

THERE have been many attempted solutions to the farm surplus problem. But the surpluses are still with us, still growing. Land retirement—on a large enough scale—offers one possible way to solve the immediate problem. And, depending on the method used, it could provide a step toward solving the long-run problems of agriculture.

A study we've made of the costs of land retirement in Iowa throws some light on the possibilities of this type of program. The study was made at Iowa State in cooperation with the Farm Economics Research Division, ARS, USDA. Before we look more closely at these possibilities, though, let's make a quick review of the problems to be overcome.

What's the Problem?

The over-all farm problem can be divided into three closely related parts:

Farm Income: Farm families, and just about everyone else as well, agree on one thing—*they'd like to have more income.* And, over the past 10 years, incomes of nonfarm people have risen about 3 percent each year. But farm families haven't shared in this otherwise general prosperity. Farm incomes have remained about constant, while other incomes have been rising. The gap between the two has been widening, and farm family net incomes now are quite a bit lower than those of nonfarm people. As a result, many people would agree that farm families *should* have more income.

Individual farmers have tried to raise their farm incomes in the only way open to them—by increasing output. Added together, the results of all such individual efforts have led to increased national output. This, in turn, led to lower prices in the market and, eventually, to even lower farm incomes.

Thus, the approach most often suggested and tried has been to *hold prices up* by *moving output down.* The trouble here: A farmer acting alone has no chance to help himself in this problem.

Surpluses: The nation, in the past, has attacked the *farm income* problem through *price supports* on basic commodities. If prices could be held steady, a farmer's income would rise as fast as his productivity. But, as production has increased, not all could be sold on the market at those prices. And the government was committed to buy up the surplus.

Acreage allotments and *marketing quotas* were introduced to hold down production and thereby to reduce the amount of surplus the government would have to buy. But the continually mounting surpluses provide evidence that these production controls didn't get the job done. Yield increases wiped out the effect of acreage decreases, and diversion of land to uncontrolled crops spread the problem.

Production control has always been difficult for feed grains. Direct controls were taken off of corn in 1959. They were never tried on the minor feed grains. Total feed-grain carryover going into 1960 is about four times larger than normal during presurplus years. Stocks of wheat also are large. The cost of handling and storing the surplus commodities has risen to more than a million dollars *per day.* Almost everyone would now agree that something should be done to stop the accumulation of surpluses.

Adjustment and Efficiency: While these surpluses have been building, the technological changes which have helped to increase production have been having an-

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other effect on the farm scene. Mechanization has made it possible for each farmer to handle more land. The number of farms has been steadily declining. More than 40 percent of the farm transfers in 1959 were for farm enlargement.

Each year many men who used to farm or who'd like to farm move to nonfarm jobs. Such a move isn't so serious for a young person not yet established in farming. For an older person, with considerable capital and years of work committed to farming, the move is more serious.

Farm people aren't the only ones worried about adjustments. Concern about the Soviet challenge has prompted interest in national economic growth. A high growth rate requires that our national resources be used efficiently. The economic indicator of national efficiency is the rate of return that resources are earning compared with what they might earn in other uses. Low returns to agricultural resources indicate that national income might be raised if some of these resources were shifted to other uses.

Farm Program Goals: With the parts of the over-all problem outlined, the goals that any farm program should strive to achieve are easier to see. They might be listed like this: *(1)* to work toward better incomes for farm people; *(2)* to prevent further accumulation of surpluses; *(3)* to encourage efficient use of resources within agriculture and to aid farm people in making the adjustments which help to bring about balance between agriculture and the rest of the economy. Since government expenditures usually are involved in farm programs, a fourth goal might be added: *(4)* to keep the expenses needed to accomplish the first three goals at a minimum.

This last means that, for any two programs that would work *equally well* to accomplish the other goals, we'd choose the one requiring the smaller expense. It doesn't mean, however, choosing the program of least cost if it wouldn't be effective in accomplishing the other goals.

No single program will do as good a job as we'd like on all of these goals. And any program designed to reach one goal is certain to have an effect on the others. The task is to pick the one program or combination that does the best job on most of them.

A Land Program . . .

Now let's look specifically at a *land retirement program* as a means of controlling our excess farm production capacity. Some people are thinking more and more that this type of program may provide the best way of handling the farm problem in terms of its related parts and goals.

How Would It Work? Many different types of land retirement programs have been proposed or suggested. All have the same basic idea—to hold down the supply of farm products by taking land out of production. But various types of programs would go about it in different ways.

We couldn't study and analyze all possible types of land retirement programs that might be used. So we concentrated on a type of program that would be similar to the present Conservation Reserve. It could be briefly described as a voluntary program offering long-term contracts in all parts of the country. Payments for retiring land would vary according to the land's productivity, and heavy emphasis would be placed on taking out whole farms.

Improve Farm Income? A land retirement program could improve income in two ways. The most direct would be the payments going to farmers. They'd be giving up, however, the income that could be earned from farming or from otherwise renting out their land. So the balance of gain from this source would be rather small.

The most important boost to higher farm incomes from a land retirement program would be through higher prices for farm products than would otherwise be the case. The "price support" effect is brought about by reducing market supplies of farm products.

With enough political support and sufficient program funds, it would be possible to get almost any desired price-support effect just by varying (through price) the amount of land withheld from production.

As a reasonable goal in our analysis, we said that a land retirement program should do at least as much to maintain prices as the old support-storage program. The big difference would be that a land retirement program wouldn't in itself cause or continue the accumulation of surpluses.

Control Surpluses? To find out how much land it would take to stop the surplus buildup without a serious price fall, we looked first at feed grains—where the biggest buildup now is occurring.

Chart 1 shows the trend lines for production and use of feed grains in the United States. Actual production of feed grains fluctuates around the general trend line because of variations in weather. Many farmers, however, vary their livestock production so that all the grain they raise is fed on the farm. As a result, annual use follows production in its movements above and below the trend lines.

The gap between the production and use lines represents the net addition to surpluses. This trend is shown by itself in chart 2. In this case, the trend has been quite consistent since 1952. In the feeding year ending Sept. 30, 1959, the trend lines show an expected addition to surplus of 8.7 million tons. The actual accumulation was about 8 million tons.

The growing seriousness of surplus problems can be seen from the upward slope of the trend line in chart 2. On the average, we've been adding to surpluses each year about 600,000 tons more than the year before. So surpluses not only grow each year, but they also grow more rapidly each year.

To stop the accumulation of feed-grain surpluses in 1960, we'd need a reduction of about 9.3 million tons—a little over 6 percent of expected production. Each year after that, for as long as present trends continue, an additional 600,000 tons of potential production would need to be withdrawn

to overcome the differences in growth rates for production and use.

With current yields, it takes just about a million average acres to produce a million tons of feed grains. So we'd need to withdraw about 9.3 million acres from feed-grain production to reduce expected production by 9.3 million tons.

In Iowa about 98 percent of our cultivated cropland raises feed grains or soybeans. So solving the surplus problem of feed grains would mean that things were pretty well under control for Iowa alone.

But, for the country as a whole, it's important to consider wheat surpluses also. Should wheat acreage be reduced greatly, the land could easily be shifted to feed-grain production. And if wheat acreage isn't reduced but the price of wheat is allowed to fall, wheat could become competitive as a livestock feed. Either method of dealing independently with the wheat problem would add, in one way or another, to the feed-grain surplus problem.

Surplus stocks of wheat are large, but additions have been coming at a slower rate for the last few years. With average conditions, expected additions to wheat surpluses in 1960 will be equivalent to the production of about 2 million acres. With current production and use trends, the rate of expected additions to surplus will increase by the equivalent of about 900,000 acres each year.

Adding the 9.3 million "surplus acres" of feed grains and the 2 million of wheat gives a total of about 11.3 million acres expected to produce surplus grain in 1960. Can a land retirement program take this much land out of production and stop the accumulation of surpluses?

Past experience shows that about a third of the cropland coming into a general land retirement program would normally produce nonsurplus crops or no crop at all—land for summer fallow or land with a crop failure, for example. So it would take roughly 15 million acres of average cropland to achieve a 10.6-million acre reduction in land producing grain crops. And about 2 million more acres would have to be withdrawn each year to offset rising productivity. By 1965 the needed reduction would be up to 25 million acres if current trends continue.

A reduction of 15 million acres amounts to a little less than 4 percent of all cropland in the nation, in addition to the 7 percent (28 million acres) in the Conservation Reserve in 1960. And, if the land taken into the land retirement program were below average in productivity, even more acres would be needed.

Work in Iowa? About 675,000 acres of Iowa cropland now are in the Conservation Reserve. This is about 2.7 percent of Iowa's 25 million acres of cropland. Participation in the 1959 and 1960 Conservation Reserve programs indicates that Iowa farmers are willing to enter this kind of program—if they receive enough payment to equal the return from their alternatives of farming or renting the land. Applications for 1960 contracts at an average rate of $19 an acre were greater than available funds could handle. So it seems reasonable that more land could be rented at a higher

Chart 1 Feed Grain Use and Production

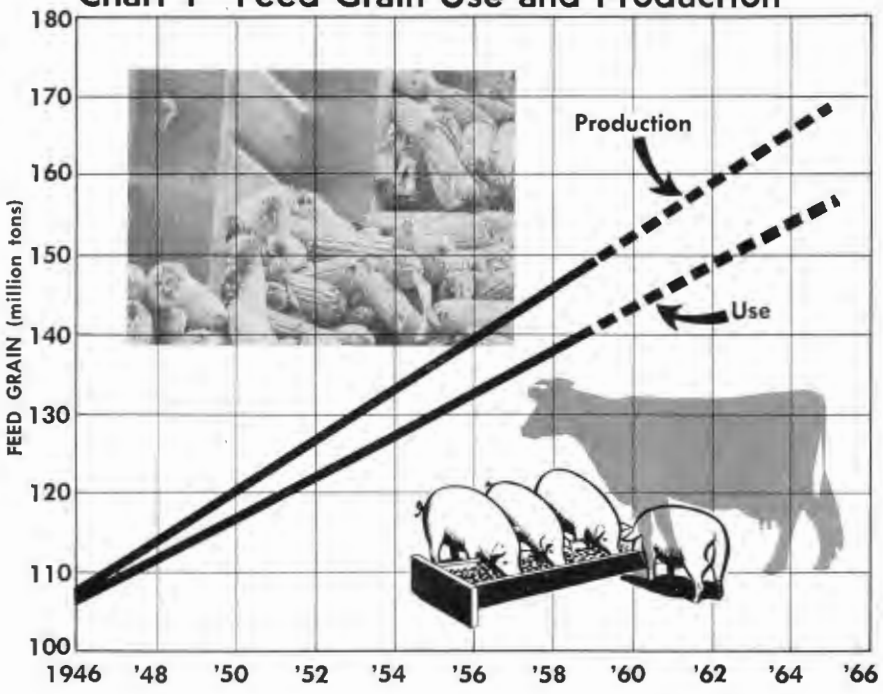
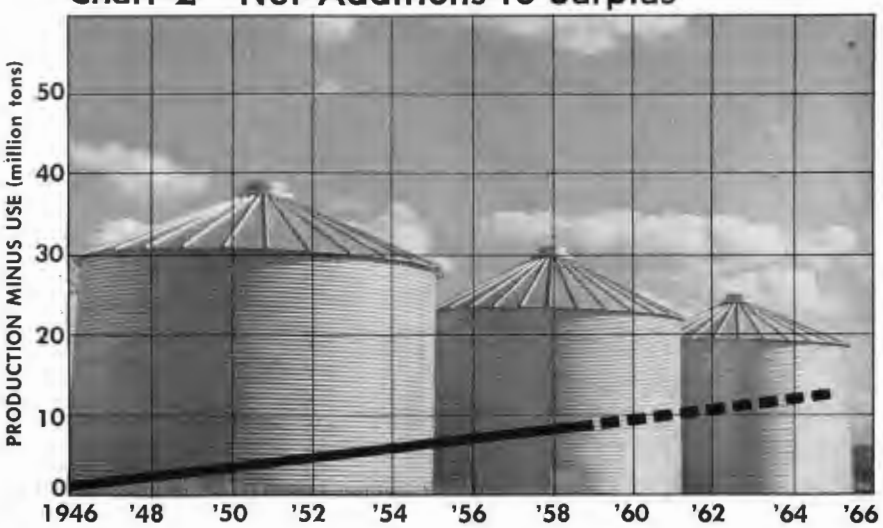


Chart 2 Net Additions to Surplus



rate—in fact, even at the present rate of $19.

To check on the possibilities for expanding the Conservation Reserve and to find out just how much it would be necessary to pay, we interviewed 222 Iowa farm operators and 95 landlords. About 60 percent of these were located in south-central Iowa; the rest, in north-central Iowa. Answers to our questions indicate that a land retirement program is generally acceptable to farmers. Here are responses to some of the key questions:

Why haven't you put your land into the Conservation Reserve?

50%—"It doesn't pay enough."
20%—"I wouldn't have enough feed left . . . ."
14%—"The . . . contract . . . just doesn't suit me."
11%—"I don't think it's morally right."
5%—"I've just never thought about it."

How much payment per acre would you have to have right now before you'd be willing to put your farm into the Conservation Reserve?

Rate per acre	Percent of farmers accepting given rate or less	
	S-C Iowa	N-C Iowa
$20	8%	2%
25	20	8
30	40	22
35	53	33
40	65	48
45	77	59
50	78	71

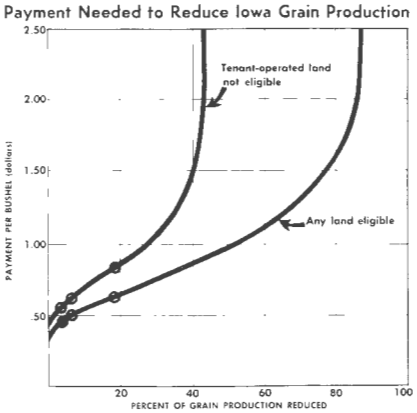
How many farms, acres and dollars of payment would it take to get Iowa's share of the kind of feed-grain production cutback we've been talking about?

To get at this, we used farmers' estimates of the payment rate they'd have to have to put their land into the Conservation Reserve. Production, rather than acreage, is the important thing. So we selected from our sample those farms that "wanted" the smallest payment in proportion to the grain production of the farm. In other words, we kept the annual cost per bushel of production control as small as possible in line with the goal of keeping government cost as low as possible.

Despite a 17-bushel average difference in corn yield between the two areas, we found that the cost per bushel of getting a given percentage reduction in grain production was nearly the same for both areas. Southern Iowa, in fact, where the rate per acre was lowest, had a slightly higher cost for reducing grain production. This is at least partly because of the importance of forage crops in southern Iowa. Relatively more hay and pasture are raised in this area, and farmers must be compensated for the value of these nonsurplus crops before they'll take their land out of feed-grain production.

By weighting responses from our two sample areas according to their acreages of cropland and production of feed grains, we estimated the type of over-all response that could be expected in Iowa. This is plotted in chart 3 for the state as a whole. The lower curve shows the cost per bushel of a given percentage reduction in Iowa grain production. The upper curve shows the same information when owner-operated farms only are allowed to participate.

Chart 3
Payment Needed to Reduce Iowa Grain Production



Three points of particular interest are circled on the curves. The first points represent an Iowa reduction of 3.8 percent, corresponding to retirement of 15 million acres of cropland across the nation. Cost per bushel is estimated at 40 or 50 cents, depending on whether or not landlords are allowed to participate.

The middle points represent a 6.1-percent reduction—which corresponds to Iowa's proportional reduction to stop surplus feed-grain accumulation. Comparable costs are 45 and 60 cents per bushel. The last and highest points represent an 18-percent reduction which, nationally, would permit a gradual reduction of surplus stocks over the next 5 years. Costs are estimated at 55 or 73 cents per bushel, depending on who is allowed to participate.

Our estimates for the 6.1-percent reduction — that needed nationally to stop surplus accumulation—show that about 1,100,000 acres in the state would need to be retired to get this percentage reduction for Iowa. The cost would be about 39 million dollars, or an average of $35 per acre of cropland.

These estimates assume that an efficient procedure would be used to select the farms that would give the best "buy" in production control. Some would be highly productive farms. As the Conservation Reserve now operates, our estimates place the cost per bushel at 10-15 cents above our "ideal" estimates. This may be a fairly good estimate of the margin of error that is bound to arise from an ideal situation to an actual program situation.

These cost estimates provide a basis for comparing this particular type of land retirement program with other types of land retirement programs and with completely different types of programs. The costs could be compared, for example, with those of a land retirement program placing high priority on taking marginal land with high conservation needs out of production. Or the costs might be compared with the costs under a storage and allotment program.

One question remains—that of the effects of a land retirement program on efficient use of resources within agriculture and on farm people in making adjustments. Land retirement, in some cases, would aid long-run adjustments by shifting "marginal" farmland to grass or trees. But it would also tend to idle some of the more productive land highly suited for farming in the long run. This, however, might be a short-run necessity to deal with the immediate surplus problems.

A land retirement program does provide an income alternative for farm people who are making adjustments. We'll tell more about this in a forthcoming article on participants in the current Conservation Reserve and what they're doing.

FOR YOUR INTEREST

home and family

What Floor Covering Is Best for You?

MODERN WAYS of living and technological progress have brought many new products into our homes and shown us new uses for older materials. One area that has seen many changes in recent years is floor coverings. Different types of tile and new fabrics in carpets make choosing a floor covering a complex decision. To aid homemakers in deciding which type of floor covering is desirable under various conditions, Experiment Station researchers studied the maintenance needs and the satisfactions to users of carpeted and smooth-surfaced floors.

In time spent in upkeep of the floors, the homemakers in the study spent about 20 minutes more per week in caring for smooth floors than in caring for carpeted floors. The time spent in washing and waxing smooth floors accounted for much of the difference.

The homemakers definitely preferred carpeted floors to the asphalt tile floors used in the study. It was found that restrictions imposed on family activities by smooth floor coverings were for the safety and protection of children (more injury from falls), whereas restrictions imposed by carpets were for the protection of the carpet (damage from spills, etc.). Carpets also tended to subdue noise.

Elizabeth Beveridge, Glenn Hawkes, Emil Jebe, Nancy Carlson, Mae Strand and Neil Throckmorton were key personnel involved in this research.

livestock

High Feed Value From High-Moisture Corn

THE FEEDING VALUE of high-moisture corn proved superior to that of conventional dry corn in tests conducted by Wise Burroughs and associates at the Experiment Station. The researchers fed 12 lots of yearling cattle a high corn fattening ration for 176 days. Half of the cattle lots received high-moisture (30 percent) ground ear corn from an airtight silo. The remaining six lots received conventional dry (14 percent moisture) ground ear corn which had been stored in a slat crib. Results definitely favored the feeding value of the high-moisture corn over the conventional dry corn.

The good results with high-moisture corn, says Burroughs, prompted the testing of high-moisture grain sorghum in a fattening cattle ration. The sorghum grain was fed to one lot of cattle, and results were compared with those from cattle receiving low-moisture cracked shelled corn. Results were disappointing; feeding value on a dry matter basis was about 25 percent better for the dry corn grain than for the high-moisture grain sorghum. Burroughs reports that the low feeding value of the sorghum apparently was due to poor digestion of the sorghum grain.

Thyroprotein Boosts Early Baby Pig Gains

IT'S IMPORTANT that sows maintain a high level of milk flow so the pigs get off to a good start, says Damon V. Catron of the Experiment Station. Thyroprotein (iodinated casein) added to a high-energy ration stimulates milk flow and results in more rapid gains in nursing pigs and in a smaller death loss per litter.

Station researchers fed 100 mg. of thyroprotein per pound of feed. A full feed of high-energy ration is necessary at this time, and thyroprotein must be fed continuously during the lactating period, warns Catron. Removal of the thyroprotein results in an immediate drop in milk production.

On excellent rations without thyroprotein, 118 sows in the Iowa experiments brought their pigs up from an average birth weight of 2.9 pounds to an average weight of 5.1 pounds for an average gain of 2.2 pounds per pig in the first week. A similar group of sows with pigs averaging 2.9 pounds at birth were fed a thyroprotein supplement in their ration. This group brought their pigs up to a 5.5-pound average at 1 week —an average gain of 2.6 pounds. This was an 18-percent greater gain for the pigs whose mothers were receiving thyroprotein.

The thyroprotein supplementation cut death loss almost in half during the first week. Sows receiving only the good base ration lost an average of 0.9 pig per litter. Those receiving the thyroprotein lost an average of only 0.5 pig per litter.

Working with Catron in these experiments are Vaughn C. Speer, Virgil W. Hays, James D. Jones, C. C. Culbertson and L. E. Johnson.

CAUTION on "Short Cuts" for Lawns

This article, the first in a series of three, will be of special interest if you're planning to build a new lawn. The following articles will deal more generally with caring for, maintaining and improving existing lawns.

by Eliot C. Roberts

A LAWN should be a *permanent* part of your home landscape. Properly constructed, it shouldn't need yearly seeding or extensive renovation. A good lawn means different things to different people. But most agree that it should be uniform—from front to back and side to side—so that it's actually inconspicuous. That is, your home and plantings of ornamental shrubs and flowers should provide the focal points, while the lawn serves as a smooth, unblemished background. Blemishes caused by weeds, insects, diseases and irregular growth may often be traced directly to "short cuts" in lawn construction.

Iowa has some of the best and most fertile soils in the world. But variations in soil drainage, acidity and general fertility from place to place complicate the production of uniform quality lawn turf. If, in lawn construction, you don't create equally favorable soil conditions over the entire lawn, you can't expect a turf of uniform quality.

A well-established turf consists of several plants per square inch. Grass plants, however, respond individually, and it's only through a like response in all locations that you can realize a uniform turf. Thus, before starting a new lawn, it's important to be familiar with the essential ingredients for good construction.

Soil Conditions . . .

Since a turf provides a complete cover over the soil surface, it's difficult to modify soil conditions once the lawn is seeded. Soils under an established lawn may be cultivated or improved only to a very limited extent through aerification by the removal of plugs. So it's extremely important to work the soil and make necessary modifications *before* seeding.

Subsoil is the material below the topsoil that regulates the stability and drainage of your lawn. To effectively judge its condition, the subsoil should be exposed. You can do this conveniently before basement excavation begins in the construction of a new home. In some locations, deposits of topsoil may be 2-3 feet thick. In this case it isn't practical to move it to change subsoil conditions.

A stable subsoil is free of stumps, rubbish and other materials which will rot or rust. A heavy clay subsoil prevents the rapid removal of excess water, and this is undesirable. Installation of drainage tile is advised in these cases. The design of a suitable drainage system is often complex enough to warrant consultation with a drainage specialist. A gravel or sandy subsoil is ideal. Surface depressions and local wet and dry spots are signs of a poor subsoil under an established lawn.

Topsoil provides the growth medium for lawn turf. Save it by putting it in piles before excavation is started. Then carefully respread it after building is completed.

Lawn grasses adapted to Iowa conditions thrive under a wide variety of soil types. But it's important to make the best use possible of whatever soil is present. In starting a lawn, it's best to have 6-8 inches of good black topsoil. A sandy soil—containing a large percentage of coarse particles—requires more frequent watering because the water-holding capacity is low. A soil with a high content of clay and silt—containing a large percentage of fine particles — compacts easily because it has a high water-holding capacity. Either of these soil conditions result in a lawn turf that's difficult to maintain. A soil with properties midway between these extremes is desirable.

If your soil is too sandy, adding organic matter will help make it more suitable for turfgrass es-

ELIOT C. ROBERTS is associate professor of horticulture.

tablishment. About 2-3 cubic yards of cultivated peat per 1,000 square feet or 1-2 inches of peat moss spread over the area and mixed with the top 4 inches of soil will do. Bales of peat moss, containing 14-15 bushels of shredded material, will cover 100 square feet to a depth of 2 inches. Mineral additives, such as vermiculite, perlite and uncrushable or fired clay pellets used according to the manufacturer's specifications, also will help to improve sandy soil.

If your soil contains too much clay and silt so that it's very sticky when wet, adding organic materials and mineral soil conditioners can help. Adding 3-4 cubic yards of coarse, sharp sand per 1,000 square feet also is recommended.

Though unclipped grasses are of great value in improving poor soil conditions, clipped lawn grasses don't have as great an effect. So it's important to provide the most favorable soil conditions possible before seeding.

Lime may be needed on some soils to promote the best turfgrass establishment. The amount needed depends on soil acidity. Where needed, 50-100 pounds of ground limestone per 1,000 square feet usually is enough to bring the pH to 6.5. A soil test will help in making specific recommendations for lime.

Fertilizer is the source of plant food for turfgrasses. Most complete fertilizers have a three-number ratio printed on the container. These numbers tell the percentages of nitrogen (N), P_2O_5 and K_2O, respectively, in the fertilizer. Add adequate amounts of nitrogen and potassium to the seedbed, and apply them at regular intervals to the mature turf. Phosphorus is readily immobilized in the soil, and surface applications result in only limited penetration into the root zone. So it's important to mix ample phosphorus into the top 4-6 inches of soil before seeding. In addition to 10 pounds per 1,000 square feet of 10-20-10, 10-10-10 or 12-12-12 inorganic fertilizer, 20-30 pounds of superphosphate (20-percent grade) per 1,000 square feet is recommended if your soil tests low in phosphorus.

Many fertilizers on the market under various trade names can give good results if you follow the directions for rate of application. The use of slowly available organic fertilizers has particular value for lawn maintenance, but inorganic fertilizers are entirely satisfactory in lawn construction.

Grubproofing and **sterilizing** your topsoil to kill soil insects and weed seeds may be desirable in some instances. As a rule, harmful soil insects and weeds may be effectively controlled in the established turf. The time required for chemical weed seed control before seeding often delays the seeding date to a point where poor turf establishment results. If grub populations in the soil are high, granular chlordane at 5 pounds of 5-percent formulation or granular dieldrin at 1⅓ pounds of 5-percent formulation per 1,000 square feet is advised. An equivalent amount of dust, wettable powder or emulsifiable concentrate is equally effective. Vapam, Mylone, methylbromide or calcium cyanamid, used according to the manufacturer's directions, may be useful in preparing a weed-free seedbed.

Lawn Seed Mixtures . . .

To provide good results, grasses used for seeding Iowa lawns must be adapted to this area. They must be reasonably tolerant of extremes in heat and cold, resistant to drouth and persistent and vigorous at a reasonable cutting height, 1½-3 inches.

The best presently available permanent grasses include: the *bluegrasses,* common Kentucky, Merion and Park, standard sunny varieties for good soils; the *fescues,* common Creeping Red, Illahee and Pennlawn, for shade and poorer sandy soils; the colonial *bentgrasses,* Astoria and Highland, for lawns of high quality that will receive intensive maintenance practices, including high levels of fertilization, watering and disease control. Also, the *tall fescues,* Alta and Kentucky 31, have a place for lawns on extremely poor soils that can't be modified, where a turf will receive rough wear and where a coarse turf isn't objectionable.

Other grasses—including Zoysias, Bermudas and so-called Mondo grass—are *not* considered permanent or desirable under average Iowa lawn conditions. They're either severely weakened by frequent clipping at lawn heights or lack adaptation to this area. The establishment and maintenance requirements are too exacting.

Small amounts of temporary nurse grasses may be included in a seed mixture to provide quick cover on banks or to protect the slower-growing permanent grasses from extreme conditions. Annual ryegrass is sometimes used for this purpose. Though preferences vary, we don't recommend clover in a lawn mixture. It colonizes in various parts of the lawn, creates conditions favorable for weed invasions and often isn't tolerant of hot, dry weather—all factors that result in a lack of turfgrass uniformity.

Seed mixtures are superior to pure seedings. The resulting turf is more hardy and easier to keep disease free. Bluegrass should predominate (50-75 percent) for average lawn conditions. If you want extra quality and are willing to fertilize with at least 6 pounds of nitrogen a season (60 pounds of 10-6-4 fertilizer or 120 pounds of a processed sewage sludge fertilizer per 1,000 square feet), Merion bluegrass may be substituted for the common Kentucky. Half Kentucky and half Merion bluegrass gives a good bluegrass balance for production of quality turf.

The rest of the mixture should consist of Creeping Red fescue, with perhaps a little domestic ryegrass where you desire a quick cover. Don't include more than 5 percent Colonial bentgrass in these mixtures. Unless you want an extremely close-clipped, highly watered and fertilized turf, eliminate the bentgrass entirely.

If your soil is poor and conditions can't be modified, try a pure seeding of Alta or Kentucky 31 fescue. This grass must be clipped 2-3 inches high. Consider its use

Steps 4-12
(see text below)

only where a better-quality turf can't be produced.

Mixtures of predominantly bluegrasses should be seeded at 2-3 pounds per 1,000 square feet. Seed Kentucky 31 and tall fescues at 6-8 pounds per 1,000 square feet. For parts of a lawn in dense shade, seed the standard bluegrass mix part way under the shade and overseed the shaded area with straight Creeping Red fescue at 3 pounds per 1,000 square feet.

Twelve Steps . . .

Successful lawn construction means doing the right thing at the right time. Your finished turf will reflect the degree of care and planning you use. The result will depend on how well you modify the soil to make it more favorable and on the care with which you choose the seeding mixture. It will depend also on how well and how carefully you carry out each of the following twelve steps.

Step 1: Plan when to construct your lawn and stick to a time schedule. Late summer and early fall seedings produce the best results in Iowa for all seed mixtures except those containing 50 percent or more Merion bluegrass. This grass has extremely slow growth in the fall, but fills in more satisfactorily following spring seeding. Early spring is the second best time to seed a new lawn, but don't work the soil when it's sticky or wet.

Sometimes a new lawn must be started in late spring or early summer. At this time of year, you must keep the topsoil moist by frequent sprinkling. Adding extra organic matter to the soil before seeding, covering the seed with a little extra topsoil and protecting the seeding with a covering of 1/16-1/8 inch of clean hay or straw will serve to conserve moisture and encourage the seedling turf. If water is limited, do *not* seed your lawn in late spring or early summer.

Step 2: Measure your lawn area to determine its size. Additions of organic matter, sand, lime, fertilizers, pest-control chemicals and seed are all made at rates on the basis of 1,000 square feet. You won't be able to carry out most of the following step unless you know the size of your new lawn.

Step 3: For most Iowa soils, the standard recommendations outlined earlier for organic matter, lime and fertilizer should result in an attractive lawn. Where there's doubt that your soil falls into a suitable classification for lawn use, a soil test will aid in judging its texture, acidity and plant food requirements.

Recommendations based on soil tests are available from county extension offices, commercial concerns, landscape contractors and nurserymen. To get a soil sample, take several specimens—each from a depth of 3 inches—from scattered parts of the lawn. Take the samples before you make any treatments, combine them, mix well and save 1 cupful of the mixture for the soil test.

Step 4: Keep topsoil in a pile if building a new home. Spread it evenly over the lawn after a stable, well-drained subsoil has been established. The final grade or slope of the lawn should be such that good surface drainage is evident. Normally a fall of 1 foot in each 50 will keep excess water moving through the surface of the lawn turf. Too steep a slope may lead to erosion, difficulties in mowing and possible "scalping" at the top or crown. Not more than a 1 foot drop in 3 is recommended.

Spreading topsoil and final grading

may be started at any time the soil is dry enough to be worked without sticking to implements or becoming compacted. Remove stones, roots and other material from the topsoil in this operation. The thickness of the topsoil should be uniform on slopes and in level areas alike.

Step 5: Organic matter, sand and other soil additives can be mixed with the topsoil with a small rotary garden tractor. Hand mixing is slow, hard work and seldom results in a uniform mixture. Even distribution of these materials in the top 4-6 inches of soil is most important.

Step 6: Ground limestone, complete fertilizer, additional superphosphate and any insecticides may all be spread on the soil at the same time.

Step 7: Rake ground limestone, complete fertilizer, superphosphate and insecticide into the top 4 inches of soil as the final grade and seedbed are prepared. After raking, roll the soil with a heavy roller, 200-300 pounds, to define humps and hollows in the new lawn. Rake the surface lightly to even off these irregularities and to prepare a loose seedbed of ¼-½ inch of soil.

Step 8: Sow the seed either by using a mechanical spreader or scattering it by hand. Either will be most uniform when the air is calm. Best results often are obtained by dividing the seedbed into several equal parts and setting apart a portion of the seed for each area. Seed half of the seed for each area in one direction and the other half a second time at right angles to the first.

Step 9: Rake in the seed *lightly*; be careful that the teeth just touch the soil surface. Too much pressure will cover the seeds too deeply or move some of them and leave bald spots in the new lawn. Cover the seed so that about 10 percent is still visible.

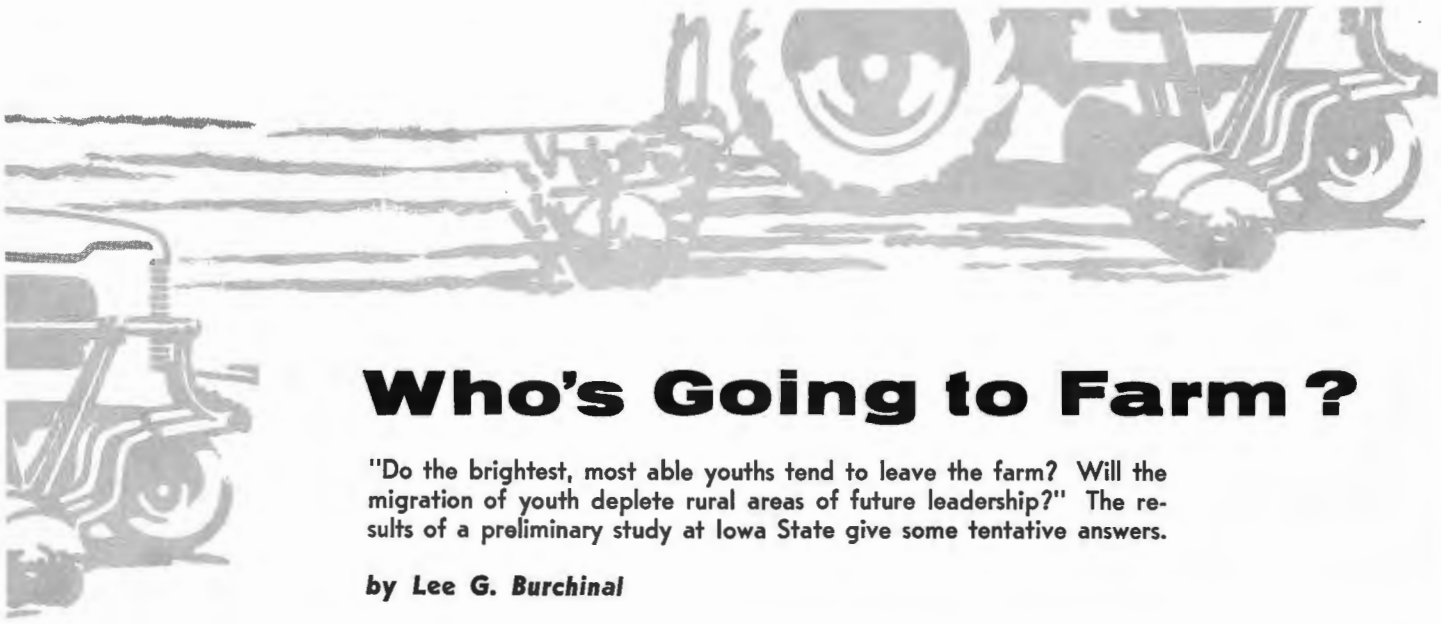
Step 10: Roll the area with a *light* (50-75 pounds) roller, such as a roller with most of the water ballast removed, to firm the soil around the seed.

Step 11: Frequent, light watering promotes seed germination and rapid establishment of the lawn. Don't allow the seedbed to dry or to become soaked or waterlogged. For light sprinkling, hand watering usually gives you better regulation of the amount of water than a mechanical sprinkler. As grass begins to grow, decrease the frequency of watering, but increase the amount of water each time. Normally a 2-month-old turf may be watered the same as an established lawn.

Step 12: Mow as soon as clippings can be removed at a cutting height of 1½-2 inches. Keep your mower sharp, or young plants will be injured. Until the new turf has filled in enough to hide sight of the soil, your mowing should be the only traffic on the turf. Supplies of fertilizer in the seedbed of spring-started lawns normally will last until fall; refertilize at that time. Fall-started lawns will need additional fertilizer the following spring.

An Old Lawn?

What about an old lawn that wasn't constructed properly and constantly produces a poor-quality turf? The best answer is complete renovation as suggested by the recommendations and steps for starting a new lawn. Otherwise, areas with at least a 50-persent basic grass cover with no extremely weedy large areas may be improved by using chemical weed killers, followed by improved maintenance and care practices. A forthcoming article will offer suggestions on maintaining and improving existing lawns.



Who's Going to Farm?

"Do the brightest, most able youths tend to leave the farm? Will the migration of youth deplete rural areas of future leadership?" The results of a preliminary study at Iowa State give some tentative answers.

by Lee G. Burchinal

ALL YOUNG MEN face the task of deciding about their immediate jobs and their life careers. Farm boys have to decide whether they wish to enter farming or to seek nonfarm employment or careers. Thousands of young men each year leave their farm homes for jobs and careers in towns and cities. And there's often speculation about differences between the young men who stay to farm and those who leave their local communities.

Put in bluntest terms, here are two typical questions: "Do the brightest, most able youths tend to leave the farm and rural areas?" "Will rural areas be depleted in future leadership by the migration of youth?"

Preliminary research completed at Iowa State provides some tentative answers to these kinds of questions. This information will be supplemented by a more extensive statewide study. But, for immediate clues, let's look at the preliminary information obtained from the 103 tenth and twelfth grade farm boys included in the study reported last month. (See "What's Your Son Going to Do?" in the March issue or reprint FS-861.) All of these boys answered questions about their plans and some characteristics of their families.

Of these boys, 27 percent said they planned to farm, another 27 percent were uncertain about their plans, and 46 percent definitely planned to enter nonfarm employment. In what ways were these three groups the same? Different?

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Their Families . . .

First let's look at some of the farming and economic conditions of the boys' families.

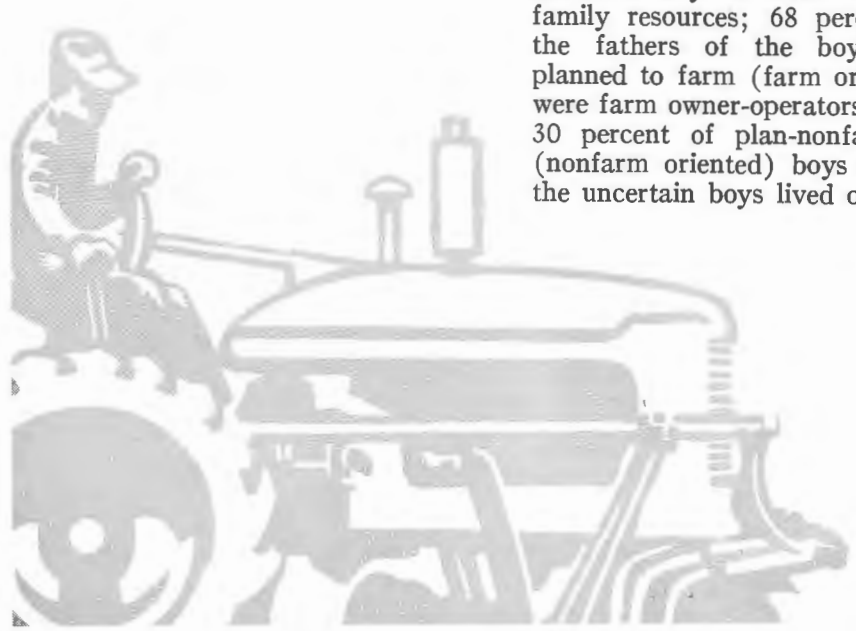
The boys who said they planned to farm had an advantage over the other boys in terms of farm family resources; 68 percent of the fathers of the boys who planned to farm (farm oriented) were farm owner-operators. Only 30 percent of plan-nonfarm-job (nonfarm oriented) boys and of the uncertain boys lived on owner-operated farms. Also, the boys who planned to farm much more frequently reported that a farm was or would be available to them (81 percent). Only 45 percent of the nonfarm-oriented boys and 52 percent of the uncertain boys reported that a farm would be available to them.

While the percentages of ownership were similar among the families of the nonfarm-oriented and undecided boys, there were some indications that the families of the undecided boys had less farming resources. For example, more of the fathers of the undecided boys had nonfarm jobs than did the fathers of boys who planned either farm or nonfarm careers. Also, the level of farm mechanization was lower among the farms of families of the undecided boys. There was no difference on this basis, however, between the boys planning to farm and those definitely planning nonfarm careers.

Parents' Attitudes . . .

Usually we think of farm boys as being more likely to talk over their occupation plans with their fathers than with their mothers. But, in all three groups, boys more often reported their mothers as having expressed some opinion about their sons' occupational plans. Boys who had reached a definite decision about their future occupations most often reported discussions with both fathers and mothers about their occupational plans.

We found that 39 percent of the boys who planned to farm and



44 percent of the boys who definitely didn't plan to farm reported that their fathers had never said much to them about occupational plans. A greater proportion, 65 percent, of the undecided boys reported this situation. The same trend held for mothers; 32 percent of the farm-oriented boys, 26 percent of the nonfarm-oriented boys and 50 percent of the undecided boys reported their mothers had never said much to them about future occupational plans.

Regarding future educational plans, mothers more frequently than fathers put emphasis on encouraging their sons to continue education. But the boys who planned to farm reported less frequent encouragement for additional education from either fathers or mothers. From fathers, 17 percent of the farm-oriented boys, 36 percent of the nonfarm-oriented boys and 40 percent of the undecided boys reported definite encouragement for continuing their education. From mothers, the percentages were 25, 53 and 54, respectively, for the three groups of boys.

How Boys Compare . . .

Boys who plan to farm had lower grades. Of the boys who planned to farm, 18 percent said they generally got A's or B's, 64 percent said they generally got C's, and 18 percent said they usually got D's and F's. In contrast, 42 percent of the boys with definite nonfarm plans were in the A and B range, 50 percent usually got C's, and 8 percent were in the D and F range. Of the undecided boys, 36 percent were in the A and B range, 53 percent said they usually got C's, and 10 percent reported D's and F's.

Boys who plan to farm rate freedom on the job as the most important factor. The boys were asked to rate characteristics of jobs that appealed to them for their life's work. Whether they planned to farm or not or were undecided, they all rated work which would always be interesting as of highest importance. "The amount of money" they could make and "pleasantness of working conditions" were of moderate importance to all boys. "Opportunity for physical work" was given a low priority by all.

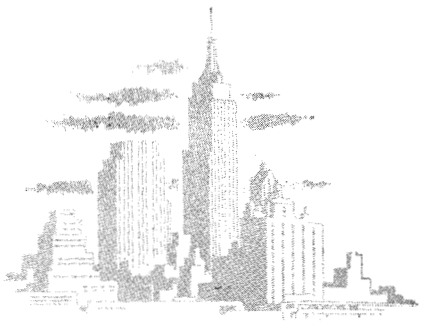
But there were differences, too. Boys who planned to farm gave "freedom on the job, to be my own boss" the highest priority of all job characteristics listed. This was of secondary importance to boys in the other two groups. "Chance of advancement" was given a low priority by the boys who planned to farm; a moderate priority by the other boys. "Intellectual challenge" was ranked low by the farm-oriented and undecided boys but was of moderate importance to the nonfarm-oriented boys.

Boys planning to farm rate farming over nonfarm work. Of the boys planning to farm, 75 percent rated farming as better than most nonfarm jobs. This view was expressed by 15 percent of the boys who definitely planned not to farm and by 39 percent of the undecided boys. About the same percentage, 18 percent, of the farm-oriented and undecided boys considered farm and nonfarm work about equal in appeal, while 27 percent of the nonfarm-oriented boys held this view. At the other extreme, 7 percent of the farm-oriented boys, 58 percent of the nonfarm-oriented boys and 43 percent of the undecided boys rated most nonfarm jobs as being better than farming.

Farm-oriented boys strongly asserted the superiority of rural life. None of the boys who planned to farm felt that farm living was inferior to city life. But 13 percent of the boys planning not to farm and 11 percent of the undecided boys expressed this view. On the other hand, 14 percent of the farm-oriented boys, 18 percent of the undecided boys and 46 percent of the nonfarm-oriented boys felt that farm and city life were "about the same." Most, 86 percent, of the boys planning to farm felt farm life was superior to city life. This view was shared by 71 percent of the undecided boys and 41 percent of the boys planning not to farm.

How They Decided . . .

Boys who plan to farm less often consult teachers or counselors about their occupational plans. Of the boys planning to farm, 57 percent said they hadn't talked with a teacher or counselor about their occupational plans during the past year. For boys planning not to farm and the undecided boys, the corresponding figures were 36 and 22 percent, respectively. Percentages of the three groups of boys reporting one or two discussions with teachers or counselors were about the same; 36, 34 and 37 percent, respectively. At the other extreme, 7 percent of the farm-oriented boys, 30 percent of the nonfarm-oriented boys and 41 percent of the undecided boys reported three or more discussions about occupational plans.



Different persons influenced the decisions of the three groups of boys. The importance of discussions with teachers or counselors was reflected in the answers the boys gave as to who was important in helping them decide on their occupations.

Boys planning to farm listed fathers as the most important influence; teachers ranked next; mothers and friends tied for third. Boys planning nonfarm employment listed teachers or counselors first, with fathers, mothers and brothers ranked about equally as far less important. The undecided group rated fathers and teachers or counselors about equally and only slightly ahead of brothers and friends.

Boys planning to farm are more satisfied with their present job information. Of the boys planning to farm, 29 percent said they

needed little or no additional information about occupational opportunities other than farming. This view was held by 13 percent of those who planned not to farm and by 11 percent of the undecided boys. "Some" additional information was desired by 46 percent of the farm-oriented boys, by 15 percent of the nonfarm-oriented boys and by 21 percent of the undecided boys. Only 25 percent of the boys planning to farm wanted "considerably more" information about nonfarm jobs. This was true of 72 percent of the boys planning not to farm and of 68 percent of the undecided boys.

Boys planning to farm less often plan for education beyond high school. Of the boys planning to farm, 61 percent didn't plan for education beyond high school. This was true of 33 percent of the undecided boys and 11 percent of the boys who planned to enter nonfarm employment. College was in the plans of 25 percent of the farm-oriented boys, 48 percent of the occupationally undecided boys and 58 percent of the boys planning not to farm. Business or vocational training was planned by 14, 19 and 31 percent of the three groups, respectively.

Boys list different reasons for plans. Boys planning to farm were asked to indicate why farming appealed to them. The most important reason was that they "liked being a farmer better than anything else they could do." This reason was followed closely by the fact that a farm was available. Preferences for rural over city life ranked third. The feeling that they were better trained for farming than for any other job was fourth. Last, and barely mentioned, was that the boys' parents wanted them to farm.

Among the boys definitely planning nonfarm employment, the most important reason was that farming "didn't appeal to them." The second reason, considered much less important, was the "inability to make a decent living at farming." Still less important—but grouped closely in terms of importance to the boys—were the costs of obtaining a farm and equipment, parents' opposition to farming and the lack of community attraction to interest young people even if they might want to farm.

Farm or Not?

The questions posed at the beginning of the article must be rephrased in the light of the information from our preliminary study. The information indicates that a number of conditions combine to lead a young man to decide to farm or to seek other occupational opportunities. Much more than intellectual ability is involved. The material from this study indicates that the relative opportunities to start farming and the relative values placed on rural living and on farming as an occupation are closely related to the boy's plans.

So far we've been mainly presenting the facts as we found them in this one study. Now let's pull some of these findings together and take a look at their possible meanings.

Meaning of Findings . . .

The Grade Situation: The boys planning to farm generally received lower grades in school than the other two groups of boys. Does this mean that the prospective farmers among these boys are less intelligent as a group than the other two groups of boys? Maybe. But it could mean other things. Lower grades may have been observed for these boys, for example, because fewer of them planned to continue their education beyond high school. So they may not have worked as hard as others.

By itself, the fact that more of the boys who definitely plan to seek nonfarm jobs or who were uncertain about their careers tended to get higher grades doesn't necessarily mean the "brightest" boys are leaving their home communities. It may mean simply that boys who plan to farm place less value on formal education and are less willing to take full advantage of school opportunities.

Studies often show that intellectual ability and leadership ability are related to participation in school activities. And we found no difference among the three groups of boys in social participation. This suggests that factors other than general intelligence or ability were reflected in the differences in grades received by the three groups.

Decision Factors: Farming isn't an occupation a person can enter at any time or place he wants to. It requires access to land and equipment or to the necessary capital. An important difference between boys planning to farm and those not planning to farm was the availability of a farm. This was also closely related to the fact that many of the boys planning to farm had fathers who were owner-operators. But, again, the mere opportunity to farm isn't all that was involved in the boys' decisions.

The boys planning to farm said they generally preferred rural life over city life, liked farming better than any other job they could find and wanted work in which they could be their own boss. Being one's own boss appealed very highly to the boys who planned to farm.

Some of the decision factors for the boys planning not to farm were just the opposite—they less often reported farms available to them, for example, and fewer of their family farms were owner-operated. In addition, they and the undecided boys more often said that farming didn't appeal to them or didn't provide sufficient returns for them to make a decent living.

Still, the boys planning not to farm and the undecided boys seemed caught in a conflict between living and working in the city and living and working on the farm. Remember that 58 percent of the boys planning not to farm thought generally that nonfarm work was superior to farm work. But only 13 percent of these same boys said that city life in general was better than farm life.

The undecided boys, too, showed definite attachment to rural life and farming as an oc-

cupation. But they more frequently indicated a lack of opportunity to get started farming and were less satisfied with the returns from farming than the boys who planned to farm.

Farming by Default? A person may enter an occupational field after carefully considering his interests and abilities and the relative opportunities, rewards and training needed for one occupation in relation to others. Or, a person may enter an occupation because it's the only one with which he's reasonably familiar.

Some of the findings indicate that the last situation may apply to some of the boys who planned to farm. The boys who definitely planned to seek nonfarm employment had considered jobs other than farming; boys who planned to farm may or may not have seriously considered other occupations. Our findings suggest that at least some of them hadn't.

The boys planning to farm, for example, less frequently discussed occupation selection or job plans with teachers or counselors than did the other boys. They much more often indicated that their fathers, whose occupational knowledge may have been limited to farming, had the greatest influence on their decision. And the boys who planned to farm were much less interested than the other boys in having more information about nonfarm jobs.

One interpretation of these findings is that many of the boys who planned to farm made up their minds without much consideration of other job alternatives. This is fine when a young man has the interest, knowledge, ability and resources for successful farming. But premature commitment to any occupation can have unfavorable consequences—if the boy later finds he's not equipped to successfully carry out his chosen occupation.

The point here isn't a question of whether or not farming is a right or wrong choice for these boys. The question is whether they did in fact *choose* among other alternatives in line with their interests and abilities. Or did they more or less accept it without such considerations? If so, is this the best way to decide on any occupation? Both schools and parents have an important role in this respect, and, as some clubs are now showing, the 4-H vocational or career programs can be helpful in this area.

How Much Education?

In this country, the level of training necessary for most jobs is rising. This is true in agriculture as well as in technical, business and professional occupations. Young persons can obtain their basic training and some specialization in our high schools. But it's becoming increasingly necessary to plan for training and education beyond the high school level.

We found, however, that 61 percent of the boys who planned to farm and 33 percent of the undecided boys had no plans for training beyond high school. But only 10 percent of the boys planning nonfarm careers had no plans for additional training.

Two things are important here with respect to education after high school and the boys who plan to farm. (1) Today's farm operators need all of the education, training and experience they can get. Though experience alone is an excellent teacher, under today's conditions, mistakes made while acquiring experience in the absence of some training can be costly. (2) Some of the boys who plan to farm or who begin farming may not devote all of their lives to farming. They may still seek their ultimate careers in nonfarm employment. If so, they'll be competing with those who have had more training and education beyond high school.

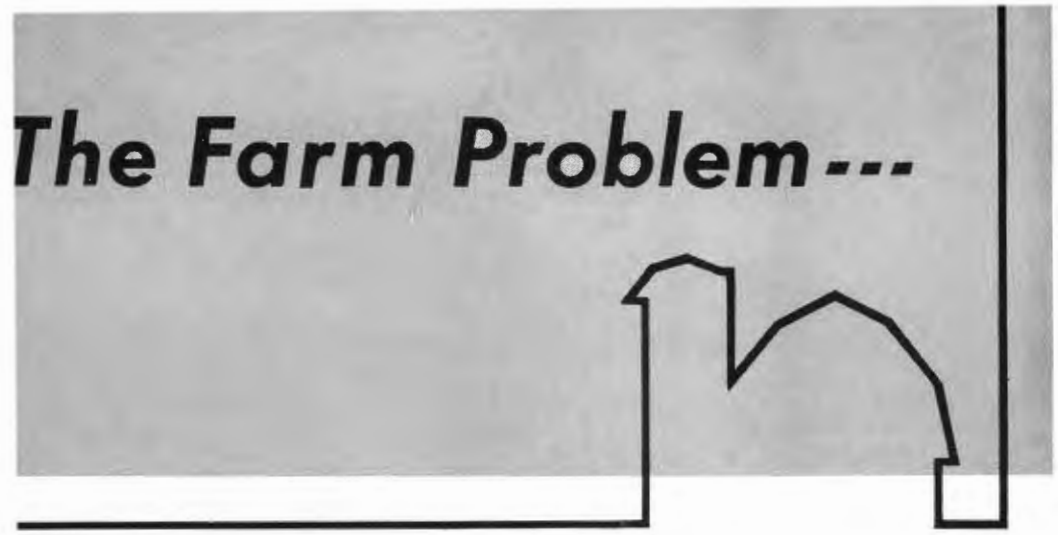
One reason that the boys who planned to farm tended not to plan further education may lie in their parents' attitudes toward educational plans. Only a small proportion of the parents had definitely encouraged them to plan for training beyond high school. It's hard to say which is cause and effect here. Do parents minimize the importance of further education because they know their sons are going to farm and feel further training is unnecessary? Or is it because the boys haven't received much encouragement for further education and recognize that they may not get much of a nonfarm job with only a high school education and, therefore, decide to remain in farming? A little bit of both may be involved.

Rather than which causes the other, however, the important thing from our findings is that lack of further educational plans and planning to farm seem to go together.

Is the reason that considerably fewer of the boys who plan to farm don't plan additional education because these boys and their families can less well afford the cost of educational training? Not likely. Our findings indicate that the boys who plan to farm have equal or better financial resources than the other boys for college, business or vocational training. The family farm ownership was highest among the families of the boys who planned to farm. Farm mechanization level was similar for the families of the boys who planned to farm and the boys who planned to seek nonfarm employment but was lower for the farms of the undecided boys. So it's likely that family financial resources were similar for the farm- and nonfarm-oriented boys and greater than for the undecided boys.

On the basis of this study, the differences in educational attitudes of the parents and in the educational plans of the boys who planned to farm and those who don't must lie in areas other than financial resources. It seems more likely that the differences are related to the idea that farming doesn't require additional training beyond high school.

On the whole, however, it seems that, whether they plan to farm or not, young men should be encouraged to carefully consider various occupational alternatives in line with their interests and abilities and to look into training for their occupational choices. Further education is valuable in agriculture, and it's also important from the standpoint of preparation for profitable nonfarm jobs should the young man planning to farm decide at some future date to seek nonfarm employment.



Return to a Free Market?

"Why doesn't the government quit trying to support farm prices and try a free market for awhile?" This article, based on the research of several Iowa State economists, provides some clues on the possible effects.

by Leon E. Thompson

WE LOOKED at the possibilities for increasing the demand for farm products and at the overall background of the problem in the first two articles in this series. In another article, we'll give some of the problems involved in controlling farm output a going over. Right now, let's look at yet another frequently suggested approach — a free market for farmers.

Our purpose in these articles is an attempt to answer current questions about these different approaches to the farm problem and to provide what information we can on the approaches that are being discussed and proposed. What about the free market approach?

"Why doesn't the government quit trying to support farm prices? Why not try a free market for awhile?"

As farm surpluses grow, more and more people are asking questions like this. A typical statement supporting the free market idea runs about like this: "Give farmers the freedom to produce all they want and sell it on the open market. It might be tough for awhile. But, after awhile, the poorer farmers would leave farming, and the more efficient farmers would probably be better off in the long run."

One of the difficulties in trying to evaluate the effects of a free market is that little research has been done in this area until recently. But research sponsored by the Center for Agricultural and Economic Adjustment at Iowa State has begun to fill in some of the gaps in our knowledge about the possible effects of a free market for agriculture. As research was completed, it has been reported in IOWA FARM SCIENCE. Recent additional research allows a look at possible *future* effects of a free market for agriculture, as well as the effects if we had had a free market in the past.

According to these studies, the answer in both cases would mean sharply lower prices for grain and livestock. But before accepting this answer, you may want to look at the conditions of these studies.

The Past . . .

A five-man team of Iowa State economists—Geoffrey Shepherd, Francis Kutish, Don Kaldor, Richard Heifner and Arnold Paulsen—dealt with the 1952-58 period in three steps:

(1) How much would livestock production have increased if the corn and feed grains that went into storage during the period had been fed to livestock?

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(2) How much would livestock prices have had to drop to induce consumers to buy and eat up the extra meat, milk and eggs?

(3) What would have happened to farm income because of lower livestock prices?

The economists also estimated the effects if wheat hadn't been stored during the period and had been added to the feed-grain supply instead.

Each year from 1952 to 1958, from 4 to 10 million tons of feed grains were added to carryover. These amounts—averaging 6.3 percent of total annual consumption by livestock—went into storage rather than being fed to livestock.

What if this extra 6.3 percent had been fed to livestock? And what about the wheat that went into storage? If the wheat stored in the 1952-58 period had gone into livestock instead, the total extra grain —feed grain plus wheat—would have averaged 10.3 percent of the total annual consumption by livestock.

Even at sharply lower prices, people eat very little extra bread. And, since other wheat-producing countries would have been forced to meet our price cut, a lower wheat price wouldn't have led to any sizable increase in exports. This leaves livestock to have absorbed the extra wheat.

Production of some kinds of livestock is more easily expanded than others. And feed grains make up a higher proportion of the total ration of some kinds of livestock than others. The research team allocated the extra feed supplies among the different kinds of livestock accordingly.

They estimated that 60 percent of the additional feed grains and wheat would have been fed to hogs, 15 percent to beef cattle, 1 percent to sheep, 14 percent to poultry for meat, 5 percent to poultry for eggs and 5 percent for dairy production. The effects on livestock prices of feeding 6.3 and 10.3 percent more feed grain are shown in table 1.

To bring about the extra livestock feeding at lower livestock prices, feed-grain prices would have had to be about 25 percent lower than they actually were, the economists found. Corn prices would have averaged 97 cents a bushel rather than $1.32. Wheat prices would have dropped to a level about 10 percent higher than feed grains in general — or from $1.98 to about $1.11 a bushel.

Considering income from both livestock and feed grains, the economists estimated that net farm income would have dropped about 34 percent from what it was in the 1952-58 period. Actual receipts would have declined about 10.6 percent. But costs would have remained nearly steady—leaving net income to absorb all of the change in gross income. Thus, a 10.6-percent drop in gross income would have been reflected as about a 34-percent drop in net farm income.

What about the feed grains and wheat now in storage? Presumably they'll be used sometime. If these stocks do go on the market eventually, they'll exert about as much depressing effect on prices as storage raised them in the first place. Storage may only have postponed the downward pressure.

TABLE 1. Projected U. S. average farm prices, actual and as estimated with greater feed consumption, 1952-58.

Farm product	Actual average prices	Estimated average prices with 6.3% more grain fed	Estimated average prices with 10.3% more grain fed
Beef cattle, cwt.	$18.03	$17.15	$16.59
Hogs, cwt.	18.23	14.77	12.58
Sheep, cwt.	6.78	6.55	6.40
Fluid milk, cwt.	4.73	4.64	4.56
Chickens, lb.	17.6¢	15.2¢	13.7¢
Eggs, doz.	39.7	34.6	31.2

The Future . . .

How about the research on the effects of a free market in the years ahead? Three of the same economists—Paulsen, Kaldor and Shepherd—completed a study of these effects last fall.

With average weather and certain other assumptions, the economist found that no controls and no supports would lead to 1962-63 average prices of $10.80 for hogs, $11.51 for cattle, 66 cents for corn and 74 cents for wheat. These figures are based on continued increase in yields per acre, high levels of grain feeding per animal unit and a substantial increase in beef slaughter.

These are projections—not predictions—the economists warn, and are based on a number of assumptions. They assumed average weather, no crop controls, a rise in national population of 2.7-2.8 million per year plus generally good times in the nonfarm economy with rising personal incomes.

As for farm policy, the economists assumed that price supports for feed grains and cotton would end with the 1959 crop; dairy supports in January 1960; acreage allotments and price supports for wheat with the 1960 crop; with only the tobacco allotment and support program continuing.

Present stocks of feed grains, wheat and cotton wouldn't be reduced in this period, and exports of farm commodities wouldn't be subsidized. About 5 million more acres would go into conservation reserve during 1960 for a total of 28 million acres. No new contracts would be signed thereafter.

The economists also had to assume certain actions in the feed-livestock area. For example: Crop acreage would remain at about the 1959 level, except for the reduction of additional conservation reserve acres in 1960 and the later addition to crop acres as old contracts expired. The trend to continuous corn would continue. And yield increases generally were based on the average increase in yield per planted acre from 1940 to 1958.

Crop production was projected for the immediate years ahead, then converted into meat, cotton, poul-

try and dairy products. For a marketing year, figured from Oct. 1 to Oct. 1, the projected marketings and prices for hogs came out as shown in table 2. The projected marketings and prices for cattle are shown in table 3.

The economists also included milk in their projections since milk-cow numbers and milk production could be expected to increase as hog and cattle prices fell. By the 1962-63 marketing year, they estimated milk might bring a price of $2.67 a hundredweight. Egg prices, sensitive to levels of beef and pork consumption, were projected at 28 cents per dozen in 1962-63 compared with 31½ in 1958-59. Corn, wheat and cotton prices for the marketing years were projected as shown in table 4.

The projections for the 1960, 1961 and 1962 crop years indicated a slight reduction in planted acreage of the four feed grains—corn, oats, barley and grain sorghum. Soybean acreage, under free market conditions, would increase.

The major impact on livestock prices, according to the economists' projections, would follow the movement of wheat into livestock feed in 1961 and 1962 and the increase in beef slaughter from the buildup of cattle numbers presently underway.

The Iowa State economists assumed that agricultural production wouldn't be much affected by the relatively low prices projected. Everyone might not agree with this assumption. But the economists believed that prices would have to be low for several years before any changes in individual farm organization and operation and in farm size and other features would be sufficient to lead to a reduction in output. And there's also the possibility that farms might be reorganized into more efficient and more productive units.

It's difficult to predict the possible changes and their effects on farm production in the long run. This is the main reason the economists didn't extend their projections beyond 1963.

"So farmers wouldn't have it so good for awhile under a free market? There are more consumers than farmers, anyway. Wouldn't consumers benefit from cheaper food?"

TABLE 2. Projected marketings and prices for hogs.

	1958-59 actual	1959-1960	1960-1961	1961-1962	1962-1963
Marketings, billion lbs.	18.5	20.1	19.4	20.1	21.0
Prices, $	15.70	13.50	14.20	12.80	11.0

TABLE 3. Projected marketings and prices for cattle.

	1958-59 actual	1959-1960	1960-1961	1961-1962	1962-1963
Marketings, billion lbs.	24.7	25.95	27.3	32.5	35.4
Prices, $	23.00	22.00	20.90	15.50	12.00

TABLE 4. Projected prices for corn, wheat and cotton.

	1958-59 actual	1959-1960	1960-1961	1961-1962	1962-1963
Corn, $	1.13	1.06	0.79	0.77	0.66
Wheat, $	1.72	1.71	1.67	0.90	0.74
Cotton, $	0.35	0.31	0.21	0.21	0.21

This is another area where relatively little research has been done. But the research that is available indicates that consumers wouldn't gain nearly as much as farmers would lose.

One study by Economists Gene Futrell and Arnold Paulsen at Iowa State looked into the possible effects that price reductions of livestock on the hoof would have on the consumer's food bill.

Briefly stated, their conclusions were:

1—If pay to handlers, processors and distributors (marketing margins) remained the same in cents per pound as at 1958 levels, the typical urban family food bill for beef, pork, chicken, eggs and milk would drop by perhaps 6 percent by 1962 under their projections of increased livestock production and lower livestock prices.

2—If, however, marketing margins continued to rise at about the same rate as they have during the past 10 years, the typical family food bill would be down by less than 3 percent from the 1958 level by 1962.

But meanwhile, the net income of typical corn-hog farms would have been about cut in *half* under the projections that would give the family food bill reductions just mentioned. Both economists emphasize that their figures are *not* predictions. They are projections intended to illustrate the probable relative effects of increased livestock production and lower on-the-hoof prices on family food bills.

"So what does it all mean?"

Taken altogether, this recent research indicates that farm product prices would move lower in the short run under conditions of a free market—more sharply than reductions in the family food bill. What about the long run? Would the drop in farm product prices cause a sizable number of farmers to leave agriculture? And would their leaving mean a drop in total farm production and bring the supply and demand for farm products into reasonable balance? Or, would those who remain operate the abandoned acres and maintain total production?

To get close to the answers of these questions, research would have to probe deeper, not only into the economic consequences, but also into the social, cultural and political consequences of a free market for agriculture.

There's general agreement that the main cause of present agricultural surpluses is in the extra amount of resources used in farm production. Some yet unanswered questions are: How can enough resources be taken out of agriculture to bring supply and demand into reasonable balance? And what is the cost to society of having too many people in agriculture?

Farm Outlook...

IN THE EGG BUSINESS, the worst is over. Poultrymen had 20 percent fewer pullets not of laying age on Jan. 1, 1960, than a year earlier. And with 3 percent fewer layers Jan. 1, this means that egg production will fall progressively behind last year's marks for the next few months.

Farmer intentions in early February were to buy 9 percent fewer egg-type chickens than last year. If these plans are followed through, the 1960 hatch will be the smallest since 1909, the first year records were kept. Low egg prices most of last year are a big factor in the plans of poultrymen to cut back on chick purchases this year.

Egg prices this spring are likely to exceed the low levels of April-June of a year ago. And a seasonal price rise is likely after early summer. The improved outlook for egg prices stems from the reduced production, plus increased activity by egg-storage operators. With farmers planning a sizable cutback in chick hatch, the storage operator is likely to figure that egg prices will go up between spring and next fall -- enough to make storage operations a paying proposition. This expected storage demand will add to the demand for eggs this spring and help support the price.

The need for some cutback in egg production was obvious. We just had more eggs than could be sold at satisfactory prices this past year. But it also looks like the poultry industry is over-correcting -- making a larger cutback than is justified by the facts of the situation. This means that the established egg producer who buys his normal number of good laying strains of chicks should find that he has a profitable venture in 1960.

HOGS . . .

Hog prices began their spring price rise in late February-early March -- after about 30 days of relative stability. In a year of decreasing production, it's normal to get a spring price rise. The price peak for the year, in a season like this, normally comes in July or August -- later than in years of increasing hog production such as we had the last 2 years.

USDA's March 1 pig survey, not yet released at this writing, will give you a clue as to what extent, if any, farmers have changed their production plans since last Dec. 1. Then they said they were going to cut the 1960 spring pig crop by 11 percent. If a significant reduction still is in the wind, producers can count on favorable hog-corn feeding ratios for the next 12 months. Compared with the season just ending, this should mean an improved outlook for both the 1960 spring and fall pig crops.

CATTLE . . .

Cattle prices moved up in late winter, with upper-grade fed cattle and feeder cattle leading the way. The rise in feeder cattle prices was most pronounced. Prices for feeders in early March were about $3 higher than at the beginning of 1960.

This year's spring price pattern is beginning to look much like that of last year. Increased receipts of fed slaughter cattle in late spring are likely to bring a spring price downturn, much as a year ago. Topping out cattle as they reach finish for their grade looks wisest this spring.

Total cattle numbers, meanwhile, continue to climb. Cattlemen added about 5 million head to their herds last year. This brought the total number of cattle and calves in the nation to 101½ million head -- the first time that cattle numbers had pushed through the century mark!

Once again there was a sizable buildup in steers and heifers. The number of calves also showed a significant increase. These cattle will be available for slaughter in the next few years. So 1960 slaughter is almost certain to surpass that of 1959 -- and the kill of 1961 to exceed that of 1960.

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But the big bulge in cattle slaughter comes after the breeding herd is expanded and when the calves from this breeding herd are old enough to be killed. There was an increase of about 1.8 million head of beef cows last year -- we could be in real trouble by 1962 or 1963 if the current rate of buildup in beef cows continues. This is not a good time to start a beef cow herd -- or to expand present herds.

Both actual values and the purchasing power of beef cattle are likely to decline in the next few years. This will be the result of the increase in marketings. Also, additions to breeding and stock herds are likely to be smaller than the last few years. This will add to the current supply available for sale. Feeder cattle prices will trend downward along with fed cattle prices. But the decline for feeder cattle is likely to be greater than for fed cattle.

LAMBS . . .

Prices of lambs moved up in January and February -- earlier than a year ago. With fewer lambs on feed, the late winter price outlook is good.

The best market for native lambs usually comes in late spring or early summer. Prices go down rather steadily after that. And lambs don't gain as well in hot weather. Hence, the importance of creep-feeding to get the best possible gains and the most rapid finish on early born lambs.

WOOL . . .

Wool prices probably will be just about as high as those of last spring -- possibly higher. Clean up of the 1959 wool clip was good, moving into consumer channels. Most of the 1958 clip that remained unsold at the beginning of 1959 also was sold last year.

But there's a question of whether a private individual should hold on to his wool clip late into summer or early fall this year. Wool mill activity in buying wool supplies usually is heaviest in the first half of the year. A downturn in business activity in late 1960 or early 1961 could have some effect on the wool market then, too.

Prospects for increased consumer incomes, plus the rising population, should strengthen the price received by growers for their 1960 wool clip. Addition of synthetic fibers to wool garments (increasing wrinkle resistance and taking the roughness out of wool cloth) has increased consumer demand for wool clothing. Increased consumer incomes also have helped the sales of more wool carpets.

FEEDS . . .

Record supplies of feed grains and the above-average moisture content of corn influenced feed-grain prices this past winter. Once the distress corn has moved, market supplies of sound corn are likely to tighten. This could produce some price strength, though probably not until late spring.

Oats continue priced high relative to other feeds. This is a reflection of short 1959-60 supplies and continuing habit in feeding oats.

Exports of oilseed meals were heavy last fall. But exports have declined since then.